

**ENGLISH**

**CONCEALED AIR CONDITIONER WITH ELECTRONIC CONTROL  
SPLIT SYSTEM: SERIES LSN DCI**

**FRANCAIS**

**CLIMATISEUR GAINABLE DC INVERTER A COMMANDE  
ÉLECTRONIQUE – SÉRIES LSN DCI**

**DEUTSCH**

**KANAL KLIMGERÄT MIT ELEKTRONISCHER STEUERUNG  
SERIE LSN DCI**

**ESPAÑOL**

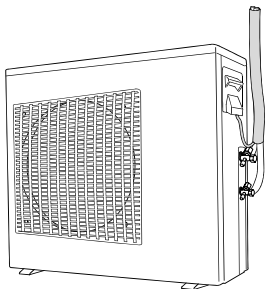
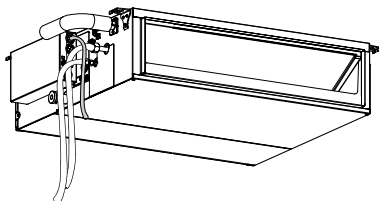
**ACONDICIONADOR DE AIRE TIPO BAJA SILUETA CON  
CONTROL ÉLECTRÓNICO - SÉRIE LSN DCI**

**ITALIANO**

**CONDIZIONATORE D'ARIA DA INCASSO A CONTROLLO  
ÉLETTRONICO - SÉRIE LSN DCI**

**РУССКИЙ**

**КОНДИЦИОНЕР КАНАЛЬНОГО ТИПА С ЭЛЕКТРОННЫМ  
УПРАВЛЕНИЕМ - СЕРИЯ LSN DCI**



**INSTALLATION INSTRUCTIONS**

**NOTICE D'INSTALLATION**

**INSTALLATIONSANWEISUNG**

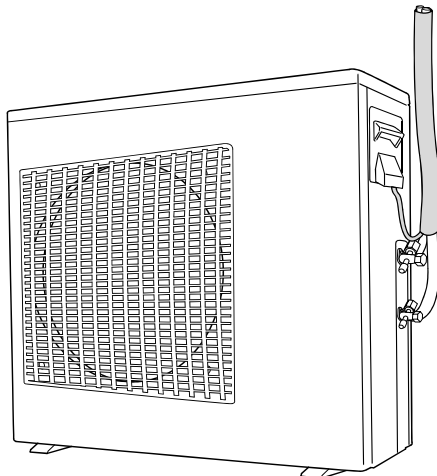
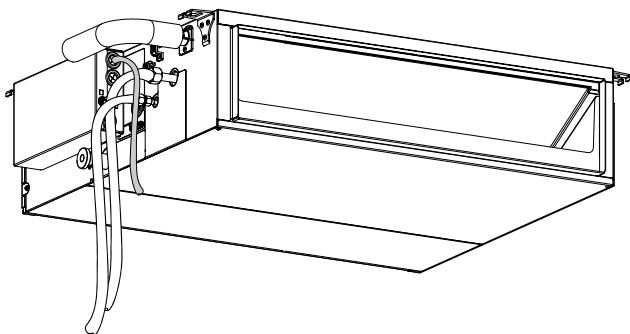
**INSTRUCCIONES DE INSTALACIÓN**

**ISTRUZIONI PER L'INSTALLAZIONE**

**ИНСТРУКЦИИ ПО МОНТАЖУ**



# **CONCEALED AIR CONDITIONER WITH ELECTRONIC CONTROL SERIES LSN DCI**



## **INSTALLATION INSTRUCTIONS**

# Getting Started...

## REQUIRED TOOLS LIST

- |   |                                    |                   |
|---|------------------------------------|-------------------|
| 1. Screw driver                               | 8. Gas leak detector               | 15. Torque wrench |
| 2. Electric drill,<br>hole core drill (60 mm) | 9. Measuring tape                  | 18 Nm (1.8 kgf.m) |
| 3. Hexagonal wrench                           | 10. Thermometer                    | 45 Nm (4.5 kgf.m) |
| 4. Spanner                                    | 11. Megameter                      | 65 Nm (6.5 kgf.m) |
| 5. Pipe cutter                                | 12. Multimeter                     | 75 Nm (7.5 kgf.m) |
| 6. Reamer                                     | 13. Vacuum pump                    | 85 Nm (8.5 kgf.m) |
| 7. Knife                                      | 14. Gauge manifold<br>(for R-410A) |                   |

## ATTENTION

1. Selection of the unit's location.  
Select a location, which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2. Do not release refrigerant during piping work for installation, reinstallation and during the reparation of refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
3. Installation work. It may need two people to carry out the installation work.
4. Do not install this appliance in a laundry room or humid ambient where water may drip from the ceiling, etc.

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## SAFETY PRECAUTIONS

Read the following "SAFETY PRECAUTIONS" carefully before installation. Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed. The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.

Incorrect installation due to ignoring the instructions will cause harm or damage, and the seriousness is classified by the following indications.

Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

### The items to be followed are classified by the symbols:



#### WARNING




This indication shows the possibility of causing death or serious injury.









Symbol with background white denotes item that is PROHIBITED from doing.



#### WARNING

1. Use qualified installer and follow carefully the instructions, otherwise it will cause electrical shock, water leakage, or aesthetic problem.
2. Install at a strong and firm location, which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
3. For electrical work, follow the local national wiring standard, regulation and the installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough it will cause electrical shock or fire.
4. Use the specified cable and connect tightly for indoor/outdoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
5. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
6. Before obtaining access to terminals, all supply circuits must be disconnected.
7. When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle, otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury. 
8. Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock. 
9. Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.
10. This equipment must be earthed. It may cause electrical shock if grounding is not perfect. 
11. Do not install the unit at place where leakage of flammable gas may occur. Incase of gas leaks and accumulates at surrounding of the unit, it may cause fire.
12. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
13. If supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Installation/Service Tooling for R410A	Changes
Gauge manifold 	As the working pressure is high, it is impossible to measure the working pressure using conventional gauges. In order to prevent any other refrigerant from being charged, the port diameters have been changed.
Charge hose 	In order to increase pressure resisting strength, hose materials and port sizes have been changed (to 1/2 UNF 20 threads per inch). When purchasing a charge hose, be sure to confirm the port size.
Electronic scale for refrigerant charging 	As working pressure is high and gasification speed is fast, it is difficult to read the indicated value by means of charging cylinder, as air bubbles occur.
Torque wrench (nominal dia. 1/2, 5/8) 	The size of opposing flare nuts has been increased. Incidentally, a common wrench is used for nominal diameters 1/4 and 3/8.
Flare tool (clutch type) 	By increasing the clamp bars receiving hole size, strength of spring in the tool has been improved.
Gauge for projection adjustment	Used when flare is made by conventional flare tool.
Vacuum pump adapter & check valve	Connected to a conventional vacuum pump. It is necessary to use an adapter to prevent vacuum pump oil from flowing back into the charge hose. The charge hose connecting part has two ports - one for conventional refrigerant (7/16 UNF 20 threads per inch) and one for R410A. If the vacuum pump oil (mineral) mixes with R410A a sludge may occur and damage the equipment.
Gas leakage detector 	Exclusive for HFC refrigerant.

*Incidentally, the "refrigerant cylinder" comes with the refrigerant designation (R410A) and protector coating in the U.S's ARI specified rose color (ARI color code: PMS 507). Also, the "charge port and packing for refrigerant cylinder" requires 1/2 UNF 20 threads per inch corresponding to the charge hose's port size.*

## CAUTION R410A Air Conditioner Installation

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THIS AIR CONDITIONER ADOPTS THE NEW HFC REFRIGERANT (R410A) WHICH DOES NOT DESTROY OZONE LAYER. R410A refrigerant is apt to be affected by impurities such as water, oxidizing membrane, and oils because the working pressure of R410A refrigerant is approx. 1.6 times of refrigerant R22. Accompanied with the adoption of the new refrigerant, the refrigeration machine oil has also been changed. Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigeration machine oil do not enter into the new type refrigerant R410A air conditioner circuit. To prevent mixing of refrigerant or refrigerating machine oil, the sizes of connecting sections of charging port on main unit and installation tools are different from those used for the conventional refrigerant units. Accordingly, special tools are required for the new refrigerant (R410A) units. For connecting pipes, use new and clean piping materials with high pressure fittings made for R410A only.

Moreover, do not use the existing piping because there are some problems with pressure fittings and possible impurities in existing piping.

### Changes in the product and components

In air conditioners using R410A, in order to prevent any other refrigerant from being accidentally charged, the service port diameter size of the outdoor unit control valve (3 way valve) has been changed. (1/2 UNF 20 threads per inch). In order to increase the pressure resisting strength of the refrigerant piping, flare processing diameter and opposing flare nuts sizes have been changed. (for copper pipes with nominal dimensions 1/2 and 5/8).

In case of pipes welding please make sure to use dry Nitrogen inside the pipes.













Use copper tube of special thickness for R410A:

1/4"-1/2" 0.8 mm

5/8"-3/4" 1 mm

Do not vent **R410A** into atmosphere: **R410A** is a fluorinated greenhouse gas, covered by Kyoto Protocol, with a Global Warming Potential (GWP) = **1730**

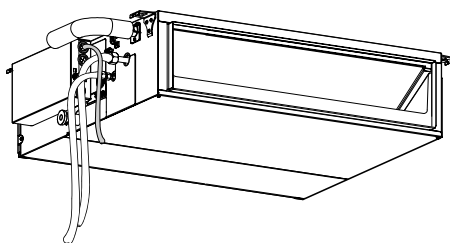
## ATTACHED ACCESSORIES

Description	Amount	Name	Use
	1	Technician's installation manual	Installation instructions
	1	Instruction manual for remote control	Operating instructions for remote
	1	Instruction manual for unit display	Operating instructions
	1	Remote control including batteries	Operating the air-conditioner
	1	Remote control bracket	Hanging the remote control on the wall
	1	Central control display	Operating and main working display
	4	Rubber mounting pads	Padding of the outdoor unit
	4	Tie-Wraps	Tightening the indoor and the outdoor unit's electrical cables
	4 each	Dibbles - Screws - Washers	Installing bracket for remote control and central control display
	1	Drain elbow	Connecting drain hose to outdoor
	1	Drain tube + clips	Connecting drain hose to indoor
	1+1	Gas tubing insulation	Additional insulation on both gas connections

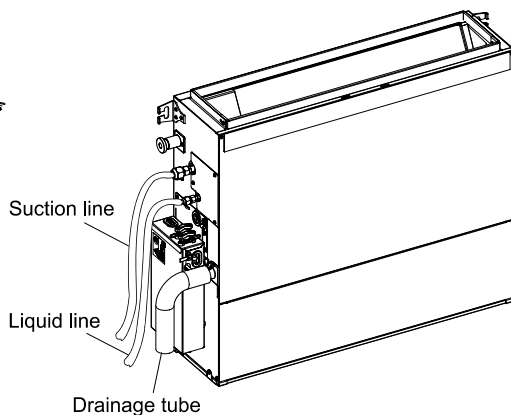
## GENERAL INFORMATION

**Indoor Unit**      The unit can be installed as concealed unit above a false ceiling or as vertical floor mounted.  
Since the unit is a concealed and not a ducted unit, it is very important that the ducts length fits the maximum external static pressure allowed in the table in page 9.  
**For vertical installation, please refer to the special instructions in drainage and electrical connection chapters.**

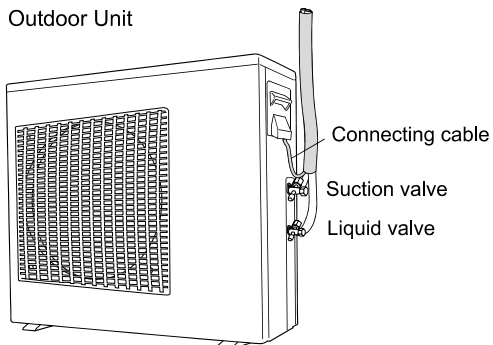
Horizontal Installation



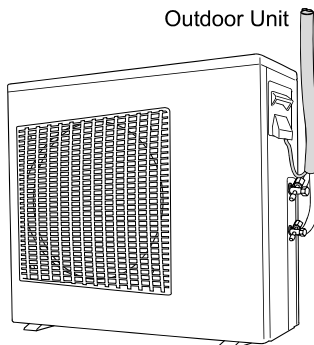
Vertical Installation



Outdoor Unit



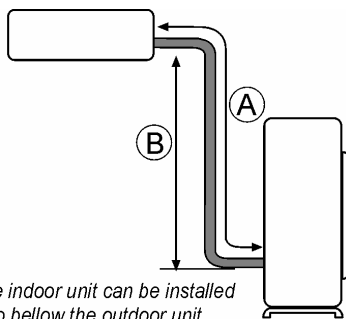
Outdoor Unit





### MAXIMUM PIPES LENGTH & HEIGHT

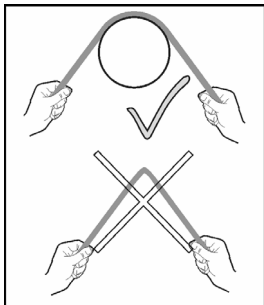
NOMINAL CAPACITY	TUBES O.D	LENGTH (A)	HEIGHT (B)
2.5kW	1/4"-3/8"	20	10
3.5kW	1/4"-3/8"	20	10
5kW	1/4"-1/2"	30	15
6kW	1/4"-1/2"	30	15
7.2kW	3/8"-5/8"	50	25



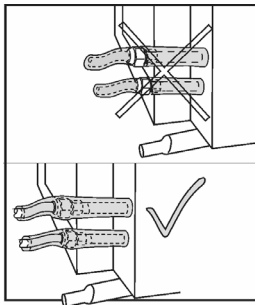
### EXTERNAL STATIC PRESSURE

NOMINAL CAPACITY	NOMINAL	MAX
2.5kW	10	30
3.5kW	10	30
5kW	10	40
6kW	10	40
7.2kW	10	40

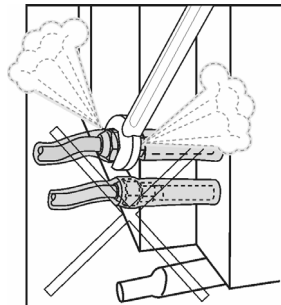
## GENERAL PRECAUTIONS



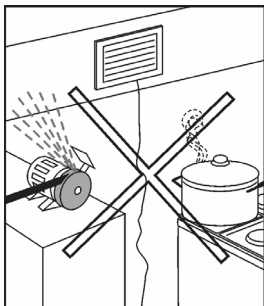
Always use the support of a large radius cylinder for banding the tubes, using pipe bending tools



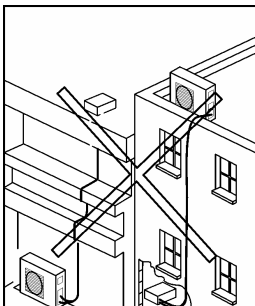
Do not leave nuts of gas tubes uncovered. Isolate the connections with the supplied tube insulation



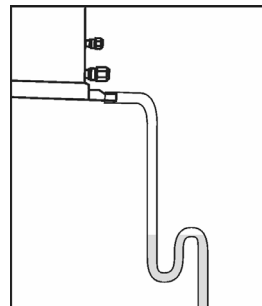
Do not unscrew gas tubes after installation



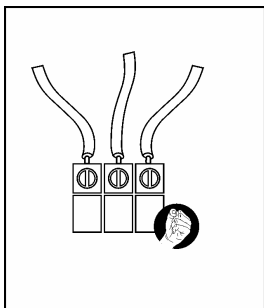
Avoid placing the indoor unit near water or oily mist



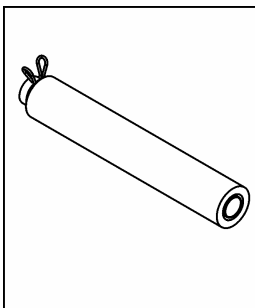
Avoid pipes bending and keep them as short as possible, minimum 3 meters



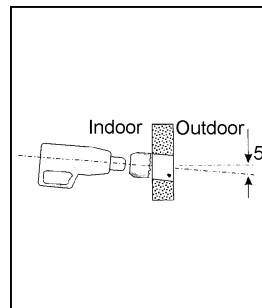
Making of a water trap (Siphon) will prevent bad odors



Tighten electrical Circuit's cables



Insulate drainage tube



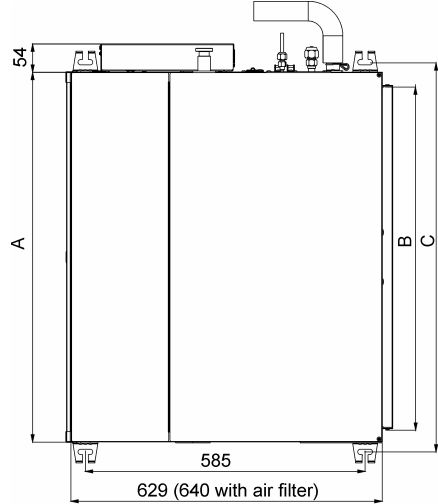
Drill the hole at an angle to prevent condensate or rain water from penetrating back into the room

INDOOR UNIT

UNIT LOCATION

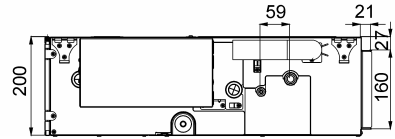
- While selecting a place for the indoor unit:
- a. Allow max. air flow to the desired space.
  - b. Allow max return air flow.
  - c. Ensure adequate drainage of condensate water.
  - d. Ensure noise reduction near bedrooms.
  - e. Leave a minimum 200 mm free space in the rear side of the unit.
  - f. Allow a free service access to electrical box.
  - h. Allow easy access to the base of the indoor unit while providing enough space from the ceiling.
  - i. Use serrated rubber under the unit and flexible joints to avoid resonance vibrations.

UNIT DIMENSIONS

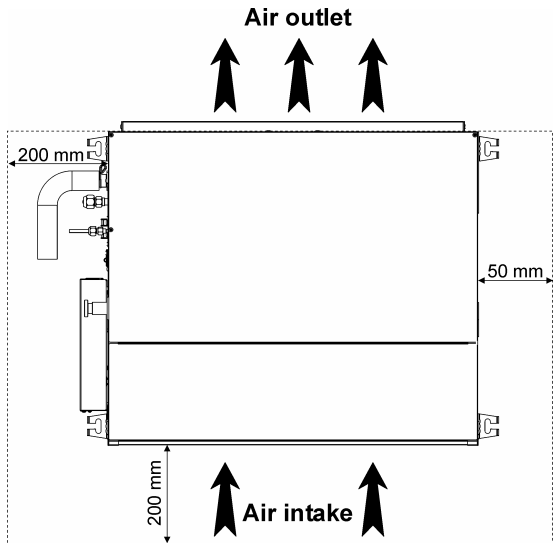


UNIT DIMENSIONS

NOMINAL CAPACITY	A	B	C
2.5-5kW	750	696	790
6-7.2kW	1050	996	1090



CLEARANCE AROUND THE UNIT AND SERVICE ACCESS

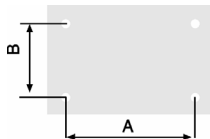


## UNIT INSTALLATION

- Insert 4 M10 or 3/8" threads rods into the ceiling.
- Introduce the rods through the slots of unit suspension brackets.
- Position the shock absorbers, add washers and screw the nuts until the unit is firmly supported.
- In case of a gap between the unit and the ceiling, put a rubber or a neoprene sheet.

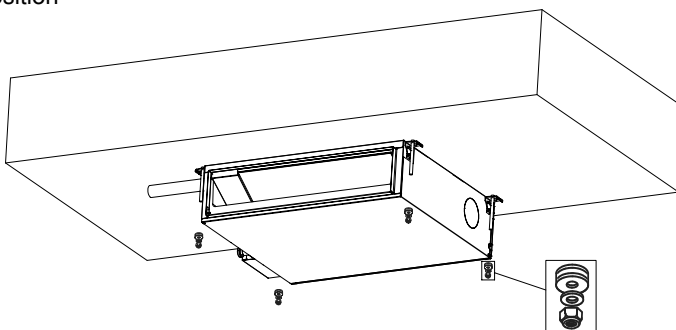
**IMPORTANT** The unit must be perfectly leveled

### HOLES DRILLING LOCATION ON THE CEILING FOR INDOOR UNIT

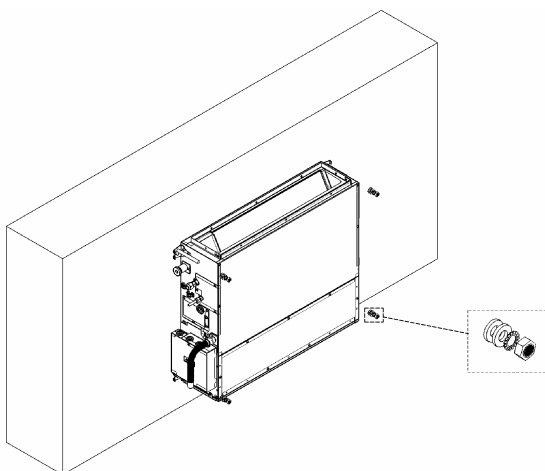


NOMINAL CAPACITY	A	B
2.5-5kW	790	565
6.72kW	1090	565

Horizontal position



Vertical position

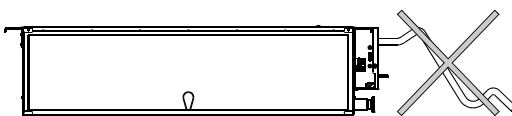
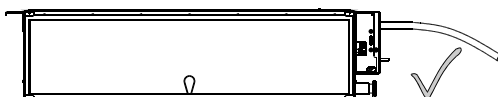
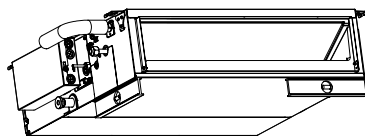


## DRAINAGE INSTALLATION

### General

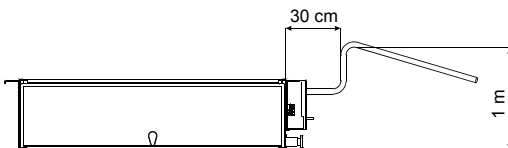
For an efficient functioning of the drainage system, please take care of the following:

- Always balance the unit with 2° downward to the drainage side of the unit.
- Use 19 mm tube drainage.
- It is recommended to prepare a drainage point by professional plumber close to the unit.
- For proper drainage, the passage must be planned with 1° down slope.
- Prevent any upwards or reverse flow in any part.
- For preventing unpleasant smells in the room, install a siphon in the installation.
- Install the draining tube with 6 mm thickness thermal insulation sleeve.



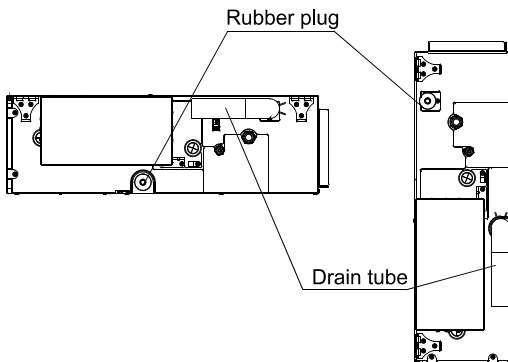
### Horizontal drainage

- The unit includes a drain pump, which can elevate condensate water up to 120 cm from the unit lowest level. The drainage tube is connected to the upper drainage nozzle.
- The lower drainage nozzle role is to empty the drain pan before servicing the unit.
- Install on the drain tube with 5-10 mm thickness thermal insulation sleeve to prevent drippings.



### Drainage in vertical installation

- For vertical installation the water pump and float switch operation must be canceled, refer to instructions in electrical connection chapter.
- Replace the drain tube location with the rubber plug.

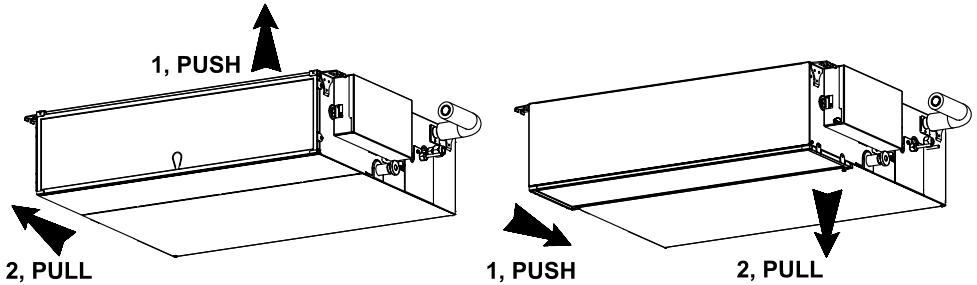


## AIR FILTER LOCATION

The air filter is located in the rear side of the unit (default from factory) but can be easily relocated in the bottom of the unit if it is required. For vertical installation, it is recommended to relocate the filter in front of the unit.

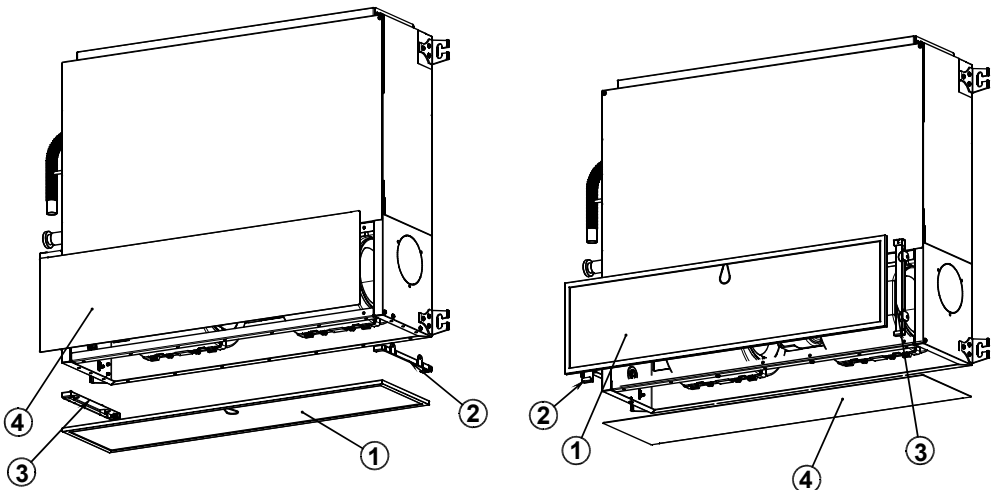
## AIR FILTER CLEANING

For cleaning the filter remove it by pushing up toward the back of the unit and pull it out as described below.



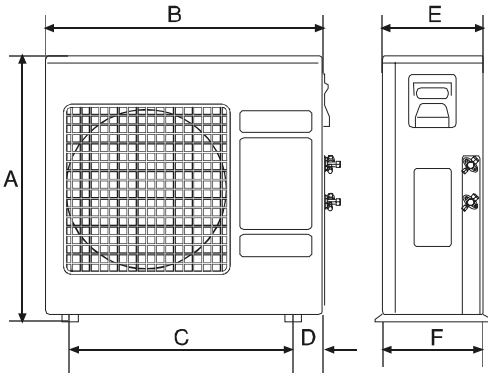
## AIR FILTER RELOCATION

1. Remove air filter from the unit.
2. Remove panel 4.
3. Remove filter trails 2-3.
4. Insert filter trails 2-3 on the opposite side of the unit.
5. Close panel 4 in the rear side of the unit.
6. Insert the filter into the trails.

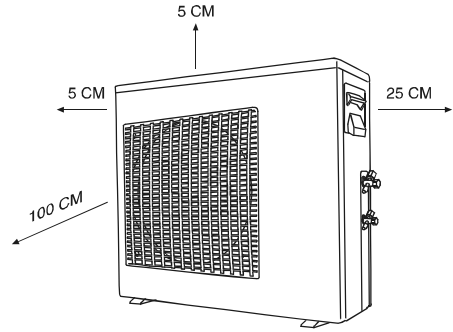


## OUTDOOR UNIT

### UNIT DIMENSIONS



### CLEARANCES AROUND THE UNIT

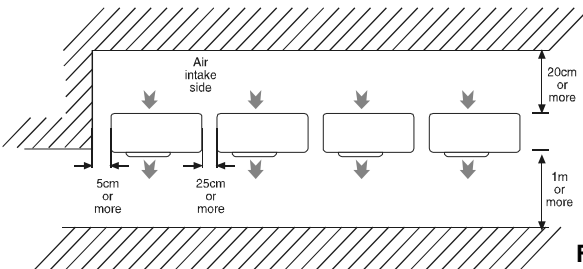


NOMINAL CAPACITY	A	B	C	D	E	F
2.5-5.0kW	610	795	500	148	290	293
6kW	690	846	545	152	302	330
7.2kW	864	950	527	212	340	378

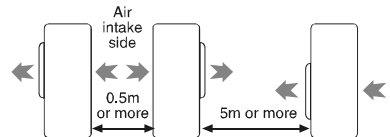
## SEVERAL OUTDOORS INSTALLATION

When installing several outdoor units please take into account the air flow around the units and follow the minimum distance suggestions as shown in the diagrams below.

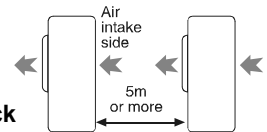
### Row Installation



### Back to Back Front to Front



### Front to Back

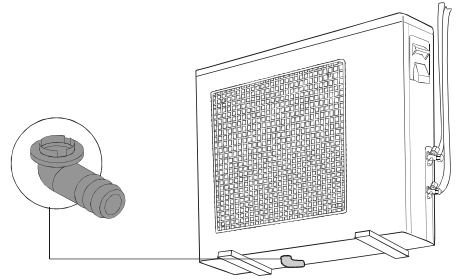


## DISPOSAL OF OUTDOOR UNIT CONDENSED WATER

In case of using a drain elbow, the unit should be placed on a stand at least 3 cm high.

Install the hose with a downward to allow smooth flow of draining water.

Use 16mm I.D. tube for drainage.



## PIPES CONNECTIONS

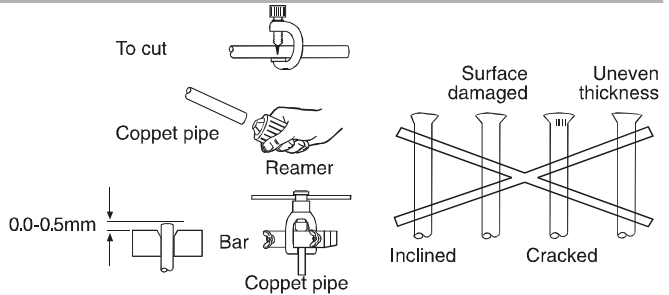
### CUTTING AND FLARING THE PIPES

1. Please use the pipe cutter for cutting the pipes.

2. Remove all burrs by using reamer. Gas leakage might happen if burrs are not removed!

Turn pipes edge down to avoid metal powder from entering down the pipes.

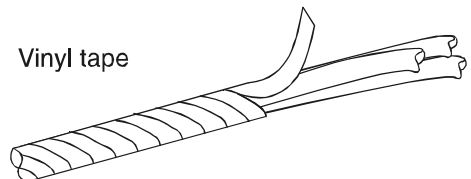
3. After inserting the flare nut into the copper pipes, please make a flare.



### PIPE INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/ Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.

2. If drain hose or connecting pipes is in the room (where dew may form). Please increase the insulation by using POLY-E FOAM with thickness of 9 mm or more.







## ELECTRICAL CONNECTIONS

### ELECTRICAL SPECIFICATIONS

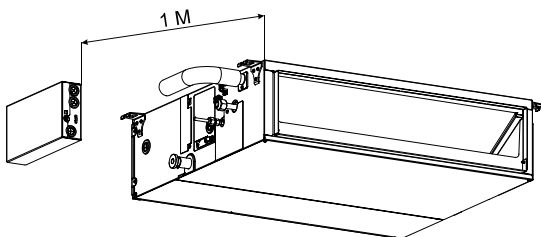
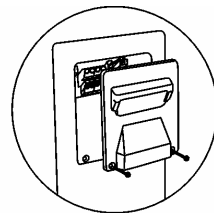
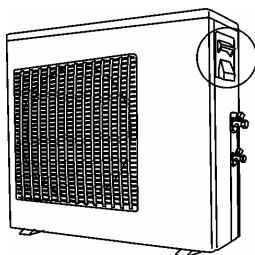
POWER SUPPLY			1PH UNITS				
NOMINAL VOLTAGE LIMITS		1PH	OUTDOOR UNIT POWER SUPPLY			INDOOR UNIT POWER SUPPLY	
230/50/1	198-264V		NOMINAL CAPACITY	CIRCUIT BREAKER	POWER SUPPLY CABLE	CIRCUIT BREAKER	POWER SUPPLY CABLE
			2.5-3.5kW	NOT APPLICABLE		16A	3x1.5mm <sup>2</sup>
			5.0-6.0kW	20A	3x2.5mm <sup>2</sup>	20A	3x2.5mm <sup>2</sup>
			7.2kW	20A	3x2.5mm <sup>2</sup>	NOT APPLICABLE	

Electrical wiring and connections should be made by qualified electricians in accordance with local electrical codes and regulation. The air conditioner units must be grounded.

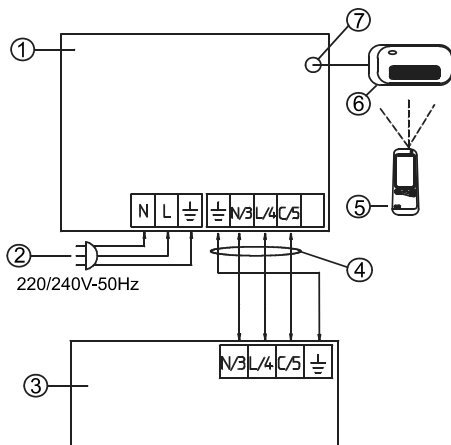
The air conditioner units must be connected to an adequate power outlet from a separate branch circuit protected by a time delay circuit breaker, as specified on unit's nameplate.

Voltage should not vary beyond  $\pm 10\%$  of the rated voltage.

1. Prepare the multiple wire cable ends for connection.
2. Take away the Indoor/outdoor cover and open the terminals, take away the cable clamp screw and turn over the cable clamp.
3. Connect the cable ends to the terminals of the indoor and outdoor units.
4. Connect the other end of the twin wire cable to the outdoor unit twin wire terminal.
5. Secure the multiple wire power cable with the cable clamps.

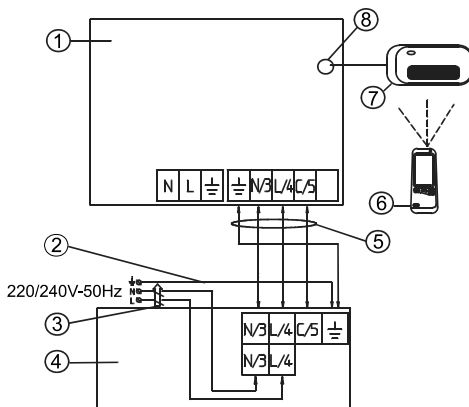


### 1PH Unit Power supply to indoor (2.5, 3.5, 5.0, 6.0 kW units)



1. Indoor unit
2. Power supply cable
3. Outdoor unit
4. Interconnecting cable  
(2.5÷3.5 kW : 4x1.5 mm<sup>2</sup>)  
(5.0÷6 kW: 4x2.5 mm<sup>2</sup>)
5. Wireless remote control
6. Display unit
7. Display connector

### 1PH Unit Power supply to outdoor (5.0, 6.0, 7.2 kW units)

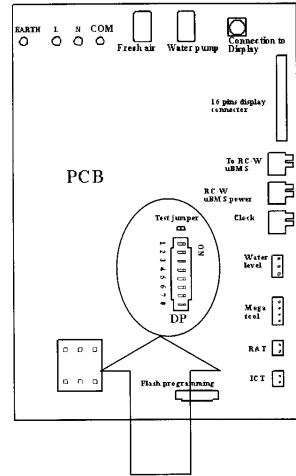


1. Indoor unit
2. Power supply cable
3. Power breaker (\*by installer)
4. Outdoor unit
5. Interconnecting cable (4x2.5mm<sup>2</sup>)
6. Wireless remote control
7. Display unit
8. Display connector

\* The power breaker must be of type that disconnects all points with 3mm contact opening

## DIPSWITCH SETTING

Each model has its dipswitch setting. It is very important verifying the setting according to the table below during installation to avoid malfunctioning of the unit.



**Dipswitch setting**

	1	2	3	4	5	6	7	8
2.5kW	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF
3.5kW	ON	OFF	OFF	ON	OFF	OFF	ON	OFF
5.0kW	ON	OFF	OFF	OFF	ON	OFF	ON	OFF
6.0kW	ON	ON	OFF	OFF	OFF	OFF	ON	OFF
7.2kW	ON	ON	OFF	ON	OFF	OFF	ON	OFF

### Water pump and float switch setting

**In case of vertical installation, change dipswitch 7 to OFF position to cancel their operation.**

### **High external static pressure**

There is an option of increasing the airflow if the ESP (external static pressure) is higher than planned. To increase the speed, change dipswitch 8 to ON position.

## DISPLAY CONTROL UNIT

### LOCATION CRITERIA

It is recommended to install the Display Control Unit close to a ceiling in a central and neutral zone at typical conditions. In addition, the aesthetic aspect should be considered. The Display Control Unit is connected to the main control board on the air conditioner (the indoor unit) by a communication cable. The cable is connected to the Display Control Unit by a quick-connector. (8 pin plug)

### INSTALLATION OF DISPLAY CONTROL UNIT ON WALL

Drill a 12 mm diameter hole on the wall, for routing the communication cable.

Open the unit cover, drill 3 holes in the wall to match the holes in the Display Control Unit, install the inserts and fasten the unit to the wall with 3 screws.

The Display Control Unit is provided of a special communication cable, 7 meters long, terminated by a plug, connected in the housing itself to a distribution box, which enables the control of the air conditioner from several different rooms, each one from its own Display Control Unit.

Connect the quick connector to the appropriate socket on the main control board in the indoor unit electrical box.

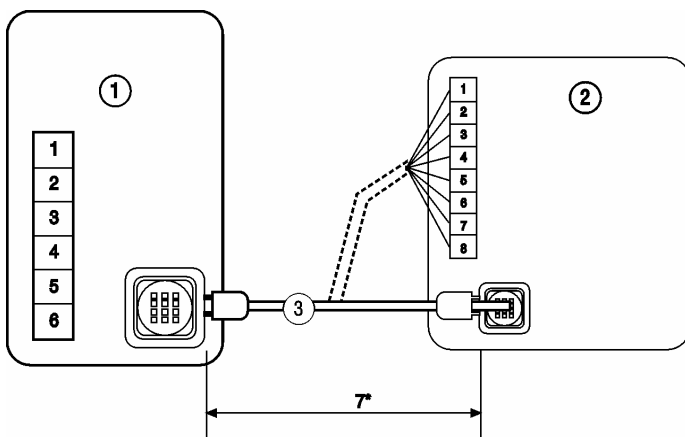


#### WARNING

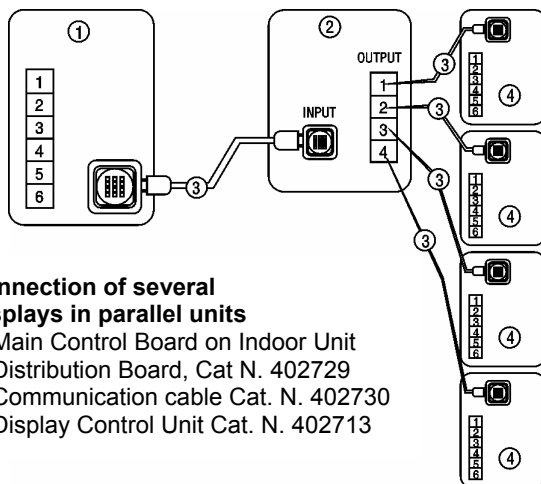
The plug should not be cut off from the communication cable if the cable length is insufficient. In such case, a 5-meter extension cable may be added.

### CONSIDERATIONS IN LOCATING THE REMOTE CONTROL UNIT

- Locate the Remote Controller Unit in such way that when mounted on its support on the wall, it will be in line sight with the Display Control Unit (at less than 8 m).
- It is recommended to establish the final location of the Remote Control Unit only after the first operation, assuring proper transmission and reception between the Remote Controller Unit and the Display Control Unit.



COLOR CHART	
Conn. Point	Wire Color
1	Gold
2	Green
3	Black
4	Brown
5	Purple
6	Yellow
7	Orange
8	Red



### Connection of several Displays in parallel units

1. Main Control Board on Indoor Unit
2. Distribution Board, Cat N. 402729
3. Communication cable Cat. N. 402730
4. Display Control Unit Cat. N. 402713

## Check list before operation

### CHECK THE DRAINAGE

Pour water into the drain tray-styrofoam.  
Ensure that water flows out from drain  
hose of the indoor unit.

### EVALUATION OF THE PERFORMANCE

Operate the unit at cooling mode and high  
fan speed for fifteen minutes or more.  
Measure the temperature of the intake and  
discharge air.  
Ensure the difference between the intake  
temperature and the discharge is more than  
8 °C

### CHECK ITEMS

- |  |   |
|--|---|
| <input type="checkbox"/> Is there any gas leakage at flare nut connections?                | <input type="checkbox"/> Is the indoor unit properly mounted to the ceiling?    |
| <input type="checkbox"/> Has the heat insulation been carried out at flare nut connection? | <input type="checkbox"/> Is the power supply voltage complied with rated value? |
| <input type="checkbox"/> Is the connecting cable being fixed to terminal board firmly?     | <input type="checkbox"/> Is there any abnormal sound?                           |
| <input type="checkbox"/> Is the connecting cable being clamped firmly?                     | <input type="checkbox"/> Is the cooling operation normal?                       |
| <input type="checkbox"/> Is the drainage OK?<br>(Refer to "Check the drainage" section)    | <input type="checkbox"/> Is the thermostat operation normal?                    |
| <input type="checkbox"/> Is the earth wire connection properly done?                       | <input type="checkbox"/> Is the remote control's LCD operation normal?          |

